Author’s response to reviews

Title: Differences and Associations of Metabolic and Vitamin D Status among Patients with and without Sub-clinical Hypothyroid Dysfunction

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Author’s response to reviews: see over
Reviewer: Vassiliki Syriou

Dear authors,

The concept of this preliminary study is nice and useful. I think this is a well written acceptable article, with limited interest, because of the reasons below.

1) Minor correct: table 1, column 2, controls (replace control)

Table 1 column 2 has been corrected accordingly.

2) I think that vitamin D is rather a marker of good health and not the cause of everything bad....

This comment is well noted from the authors and we do agree with this. In fact in table 1, while the cases have a significantly higher levels of vitamin D as compared to controls, both mean levels are still way below the sufficiency level and as such it cannot be concluded from the present design that vitamin D status has a link in several thyroid pathologies including subclinical hypothyroidism. Furthermore we were not able to find a significant association between TSH and vitamin D. The present findings do not supersede the overwhelming evidence that vitamin D is a marker of good health.

3) I prefer fT4 and not fT3, to evaluate euthyroid status for many reasons (assay method, euthyroid sick syndrome etc), in your study fT4 is similar and TSH has a mild difference between groups.

We thank the reviewer for raising this comment. We agree that FT4 is more convenient than FT3 to evaluate euthyroid status. We have mentioned this in page 5, Methods, subsection subjects. We emphasized in this paragraph that our cases were known cases and were already diagnosed based on TSH and FT4 levels. The values presented in table 1 were not used for the diagnosis and classification of the subjects to cases and controls. They have already been pre-classified based on previous medical history.

4) Hypercholesterolemia rather than high triglycerides is more prevalent in hypothyroids, in present study elevated levels of Tg in case group is probably due to obesity, or to history of diabetes, IFG, or IGT? (does not mentioned)

The specific finding of hypertriglyceridemia among cases is supported by a previous study by Wanjia and colleagues (Lipids in Health and Disease 2012). Nevertheless, we thank the reviewer for this comment because we have overlooked the possibility that this elevation was secondary to other causes such as obesity and variations in glucose tolerance. We have added this in the revised discussion of the manuscript.

5) I don’t well understand the high vit D with low Ca (malabsorption, resistance due to GLs?). Finally i think that is better for the power of your study to calculate the GFR
This comment is well noted. While there was a significantly lower levels of calcium in cases than controls, and a significantly higher levels of vitamin D in cases than controls, we were not able to elicit an inverse relationship between vitamin D and calcium in the study. Both mean levels of calcium fall within normal range, and both mean levels of vitamin D are well below the normal range. Finally, GFR cannot be assessed in the present study because creatinine was not measured.

Reviewer: Ravinder Goswami

Reviewer's report:

Aljohani et al have studied a group of patients with thyroid dysfunction and healthy controls to study relationship between subclinical hypothyroidism and abnormalities related to serum lipids and vitamin D status. From Saudi Arabia. The authors observed positive association of obesity, hypertriglyceridermia and inverse relationship between serum 25(OH)D and hypothyroidism. Despite limited number of thyroid disorder the findings are interesting. However I would like authors to explain in details the possible reasons for low serum calcium, high serum 25(OH)D and high PTH in their cases of subclinical hypothyroidism. To me this combination is out of expected physiology. Readers would also like to know about details of selection methods used to recruit cases and controls. Who were the controls. Though language is by and large good, it still require more reading and corrections by the . For example page 9 , line 1 (including probably was meant as included)

We thank the respectable reviewer for his insightful comments and we agree that some of the findings were a bit unconventional if not looked in detail. We have rephrased the paragraph which explains this finding (page 8, discussion, last paragraph) and added possible explanations. The controls were mentioned in page 5, line 8. They were subjects who tested negative for subclinical hypothyroidism. A thorough editing was done prior to the resubmission of this manuscript.